

functionality, to identify foreign bodies or to develop new products or new processing technology. Rheology helps to relate forces with deformations through mechanical properties of materials. The rheological texture analysis is more accurate and ‘descriptive’ than classical texture and sensory tests. Both techniques are widely discussed in the first three chapters of *Ingredient Interactions – Effects on Food Quality*.

Water in food processing and storage has been one of the main concerns of the food industry, as the aqueous systems are very complex and water properties are not yet fully understood. Presentation of some features and consequences of the interactions of water with food ingredients and several examples of transformations mediated by water and related to the quality of food can be found in Chapter 4.

Starches today are widely used not only to provide viscosity, they also contribute texture, gelling, film forming, and nutritional benefits to finished food products. Starch can interact with acetic acid, enzymes, lipids, proteins, sugars and sweeteners. Sweeteners are used in food to give sweet flavour, these can be found in milk, honey, maple syrup, corn syrup and many others. Sweeteners’ interaction with starch give impact on gelatinisation properties of starch, which can change the production and processing of baked goods. They also interact with fats and oils, proteins and in the end with other sweeteners. Any of these interactions will cause change in viscosity, performance and texture. All starch and sweeteners’ properties are discussed in two following chapters.

Proteins are fundamental in determining some of the major quality attributes of the final products. In many instances, protein interactions need to be controlled as they could have a negative impact on the quality of food products. Additionally, proteins undergo many interactions with small molecules. These complex reactions, mentioned in Chapters 8 and 9, serve a variety of purposes including transport of essential elements, reduction or enhancement of toxic and nutritional properties and changes in the organoleptic properties of food. Proteins and phospholipids coexist in some food ingredients (milk, egg yolk). Phospholipids can improve protein functionality by forming a conjugate with globular proteins that exhibit poor emulsifying properties. Enzymes are also proteins and they play a key role in the structure and functionality of the foods. Both phospholipids and added enzymes are mostly used to modify macromolecular interactions (Chapters 10 and 11).

Finally, the last three chapters reveal secrets of interactions between emulsifiers and flavour components with other food ingredients. Because of growing customers’ demand, only food with appealing flavour and texture will be successful in the marketplace.

In conclusion, *Ingredient Interactions – Effects on Food Quality* is intended for scientists, engineers and technologists involved in food research and industry. It is an incisive and convenient reference that presents the latest technical information available on food ingredient interactions.

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Barbara A. Rasco, Gleyne E. Bledsoe, *Bioterrorism and Food Safety*, CRC Press, Boca Raton, FL, USA, 2005 (xv+416 pp., £79.99, ISBN 0-8493-2787-3)

Food terrorism has been defined by the World Health Organization (WHO) as “an act or threat of deliberate contamination of food for human consumption with chemical, biological or radionuclear agents for the purpose of causing injury or death to civilian populations and/or disrupting social, economic or political stability” (WHO, 2003). Biological terrorism or bioterrorism involves the use of etiologic or biological toxins in a terrorist act. The term Bioterrorism has commonly been applied to acts of ecoterrorism as well, since ecoterrorism often involves biological agents and targets (e.g., plots of allegedly genetically modified crops/0 or ecosystem issues (e.g., forest practices, biodiversity, sustainable agriculture). Food system is especially vulnerable to the introduction of disease, pests, or poisonous agents, as well as being highly susceptible to attack due to its open interconnected, and complex structure. Therefore, food security is an extension of food safety programs into a new arena.

“Bioterrorism and Food Safety” is a book which arose as a result of terrorist attacks of the last few years. It contains the explanations of terms and examples concerned with bioterrorist threat, terrorist strategies and tactics, extortion, information warfare and terrorism motivation (chapter 1). Threats from terrorism come in different forms and both civil and criminal laws to prevent or to limit the impact of terrorism are in effect or are being developed.

Potential biological (e.g., bacteria, rickettsia, viruses, toxins) and toxic chemical agents (e.g., metals, cyanide, nerve agents, industrial chemicals and pesticides), which might be used to contaminate food are broadly described in chapter 2. The purpose of these weapons would be primarily to terrorize unprotected civilians and not as a weapon of war. One of the features of terrorist is that they are not afraid of any laws. However, when they are caught, then should be subordinate by severe fines. Bioterrorism regulations and their impact on the safety of the food supply and trade are presented in chapter 3.

As Lawrence Dyckmann, Head of the Natural Resources and Environment Section of the US General Accounting Office (GAO) stated: “The way we produce things makes it somewhat easy for a terrorist to infiltrate our food supply,

whether it is a live animals or the manufacturing process. So this is a real issue”. Therefore there are presented effective food security strategies and plans for production agriculture and food processing (chapter 4). Some methods of security improvements by tracking food are suggested in chapter 5 (e.g., optically active packing features, radio frequency, identification devices).

The volume contains also 11 appendixes, which are relevant supplement of data concerned with bioterrorism and food safety: (A) food safety and security: operational risk management systems approach; (B) FSIS (food safety and inspection service) safety and security guidelines for the transportation and distribution of meat, poultry, and eggs products; (C) FSIS security guidelines for food processors; (D) emergency preparedness competencies; (E) terrorist threats to food – guidelines for establishing and strengthening prevention and response systems; (F) the public health response to biological and chemical terrorism; (G) retail food stores and food service establishments: food security preventive measures guidance; (H) food producers, processors, and transporters: food security preventive measures guidance; (I) importers and filers: food security preventive measures guidance; (J) cosmetics processors and transporters: cosmetics security preventive

measures guidance; (K) traceability in the US food supply: Economic theory and industry studies.

This is a book, which demonstrates effective food programs with focus on prevention from terrorist attacks. It considers different risk management models. There are integrated food safety issues, technological developments in traceability, and legal analysis of current and pending regulations with good business practices and tie these to the development of effective and workable food security programs for food markets. It will help for readers to understand bioterrorist way of action and supply a huge amount of knowledge about biological and chemical agents, which may be a menace in terrorist hands.

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